

## Typhoid Perforation: Presentation and Management Outcome North-Eastern Nigeria

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### Abstract

**Background:** The management of typhoid ilial perforation in this low socioeconomic environment is really challenging because the population is predominantly peasant farmers lacking social amenities and quality water supply.

**Patients and Methods:** The study retrospectively reviewed all patients diagnosed with typhoid perforation and managed in Damaturu and Potiskum district Hospitals North-Eastern Nigeria between January 2012 and December 2016.

**Results:** A total of 279 patients were seen, 268 analyzed and 11 were excluded due to incomplete records. Age ranged from 3 to 50 years with male to female ratio of 1.1:1 and a mean of 14.75 years. The peak age group was 11-20 years accounting for 39.93%. The clinical features were abdominal pain in 99.25% and abdominal tenderness in all patients. Procedures done were simple closure of perforation in 87.31% patients, resection and anastomosis in 70.84%. Post-operative complications were surgical site infection in 21.64%, and renal failure in 1.12%. The mortality was 14.18%.

**Conclusion:** Typhoid perforation posed a major health hazard with high morbidity and mortality especially in a low socioeconomic environment where poor personal hygiene, improper human waste disposal, malnutrition, and poor social amenities exist. Despite high mortality associated with the disease, timely diagnosis, aggressive resuscitative measures as well as early surgical intervention can go a long way in reducing menace of the disease. Prevention is the most effective way of reducing this public health problem through health education and provision of adequate potable water.

**Keywords:** Typhoid perforation; Presentation; Management outcome; North-Eastern Nigeria

### Introduction

Typhoid ileal perforation is the most serious complication of typhoid fever associated with high morbidity and mortality [1,2]. The disease is caused by a gram negative organism salmonella typhi and paratyphi causing typhoid fever [3]. Typhoid infection mainly spread by feco-oral route and hence it is associated with poor personal hygiene and where unhealthy environmental conditions prevail especially in developing countries [4-6]. In endemic areas children below the age of 20 predominate with higher mortality than the adult population [7,8]. The treatment of typhoid ileal perforation is surgical after aggressive resuscitative measures viz primary closure, excision and closure, limited right hemicolectomy and ileostomy [9-13]. The most effective way in the control of the disease is prevention [14]. The aim of this study was to determine the pattern of presentation and the outcome of management.

### Patients and Methods

The study retrospectively reviewed all patients diagnosed with typhoid perforation and managed in Damaturu and Potiskum district

Hospitals North-Eastern Nigeria between January 2012 and December 2016. Permission for the study was granted by the Hospitals management and informed consent obtained from all patients. Information extracted from clinical and laboratory records and data analyzed using SPSS statistical analysis. Diagnosis was made based on the typical history and clinical examinations supported by radiological, laboratory investigations and confirmed by operative findings. All patients were resuscitated using intravenous fluids, antibiotics (ceftriaxone/metronidazole), tetanus toxoid, and blood where necessary. Investigations done were full blood count; blood chemistry, random blood sugar, Widal test, and stool culture. Others were erect or left lateral decubitus plain abdominal radiographs, chest X-ray, and abdominopelvic ultrasound scan. All patients had definitive surgery under general anesthesia.

### Results

A total of 279 patients were seen, 268 analyzed and 11 were excluded due to incomplete records. Age ranged from 3 to 50 years with male to female ratio of 1.1:1 and a mean of 14.75 years. The peak age group was 11-20 years accounting for 107 (39.93%) Table 1. The clinical features were abdominal pain in 266 (99.25%) and abdominal tenderness in all (100%) patients Table 2. Gross monthly distribution of patients were 56 (20.89%) in July and 8 (2.99%) in the month of May

Table 3. Perforations were single in 183 (68.28%) while 85 (31.72%) were multiple with 13 perforations in an individual being the highest. Procedures done were simple closure of perforation in 234 (87.31%) patients harboring 267 perforations, resection and anastomosis in 21 (7.84%) patients, right hemicolectomy in 13 (4.85%). Post-operative complications were surgical site infection in 58 (21.64%), and renal failure in 3 (1.12%) Table 4. The mortality was 38 (14.18%). All patients with residual abscesses were re-explored. One patient with enterocutaneous fistula that failed to close on expectant management had re-exploration and right hemicolectomy. Patients with wound dehiscence had secondary closure.

Age (years)	No	%
01-10	67	25
11-20	107	39.93
21-30	61	22.76
31-40	19	7.09
41-50	14	5.22
Total	268	100

**Table 1:** Age distribution.

Clinical features	No	%
Abdominal pain	266	99.25
fever	264	98.51
Vomiting	178	178
Constipation	114	114
Diarrhea	90	33.58
Abdominal tenderness	268	100
Abdominal distention	254	94.78
Feculent paracentesis	95	79.85

**Table 2:** Clinical features.

Month	No	%
January	13	10.66
February	9	7.38
March	7	5.74
April	5	4.09
May	3	2.46
June	4	3.28
July	27	22.13
August	13	10.66
September	9	7.38
October	8	6.56

November	7	5.74
December	17	13.93

**Table 3:** Gross monthly distribution of the disease over the period.

Complication	No	%
Surgical site infection	58	21.64
Mortality	38	14.18
Wound dehiscence	18	6.72
Residual abscess	13	4.85
Pneumonia/atelectasis	11	4.11
Enterocutaneous fistula	7	2.61
Re-perforation	6	2.24
Renal failure	3	1.12

**Table 4:** Post-operative complications.

## Discussion

The peak age group in this study was 11-20 years with about 65% of the patients being 20 years or younger when compared to Ugochukwu et al. in Enugu that found the peak age to be 10-19 years [15]. The disease clinically presents with varying clinical features among such features are fever, abdominal pain, headache, abdominal distention and tenderness especially when perforation occurred. The current study found fever, abdominal pain, abdominal distention and tenderness as the major features in keeping with previous study by Phillippo et al. [16]. Strikingly, the current study found a well-established seasonal variation in prevalence of the disease that coincided with the onset of rainy and dry seasons. This is quite expected when rainfall is enough to cause runoff with attendant contamination of source of drinking water.

The challenges associated with these patients were late presentation with attendant complications such as septicemia, electrolytes imbalance, anemia, severe dehydration and malnutrition [17]. Such complications were encountered in this study. Spectrum of complications do exist in the postoperative period such as surgical site infection, wound dehiscence, and residual abscesses which are known to be associated with dirty abdominal surgeries [18,19]. The current study found similar trend. Reperforation, though rare, require high index of suspicion for its detection. When detected should be managed by immediate reoperation. There was 2.24% reperforation rate in our series which were dealt with by re-exploration. Ekenze et al. Enugu Nigeria reported reperforation rate of 21.3% [20].

The low reperforation rate in our series was as a result of taking into cognizance the potential areas that are liable to perforate and dealing with them at initial operation. During surgery for typhoid perforation the whole ileum should be inspected for such potential areas for reperforation and should be under run with sutures. Enterocutaneous fistula is another potential complication liable to occur in bowel resection, the current study found 2.61%. However, all except one enterocutaneous fistula closed on expectant management. This emphasized the need for patience in their management. Previous study found similar trend of 2.5% by Anupama et al. [21]. The current study

had mortality rate of 14.18% which was higher than findings of 8% by Mock et al. [22] Late presentations and complications of anemia, malnutrition, and sepsis accounted for the higher mortality in our series.

## Conclusion

Typhoid perforation posed a major health hazard with high morbidity and mortality especially in a low socioeconomic environment where poor personal hygiene, improper human waste disposal, malnutrition, and poor social amenities. Despite high mortality associated with the disease, timely diagnosis, aggressive resuscitative measures as well as early surgical intervention can go a long way in reducing menace of the disease. The periodic variation as noted in this study may help to make adequate planning in preventive measures. Prevention is the most effective way of reducing this public health problem through health education and provision of adequate and potable water.

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